

What is claimed is:

1. A work structure for constructing a modular elevator support structure for an elevator system, comprising:

a pit channel module;

a plurality of vertical modular guide rails, one end of each guide rail attached to the pit channel module and the other end connectable in an end-to-end manner with additional guide rails or a header module, wherein at least one preselected modular guide rail has a plurality of holes linearly aligned along its longitudinal axis; and

a platform slidably coupled to the preselected guide rail and connected to a motor drive having a gear, the gear having teeth which are sized and configured to engage with the holes of the preselected guide rail,

wherein operating the motor drive causes the teeth of the gear to engage the holes of the preselected guide rail and thereby raise or lower the platform along the vertical guide rails.

2. The work structure of claim 1, wherein the holes are formed in the preselected guide rail, or are formed on a longitudinal rail fastened to the preselected guide rail.

3. The work structure of claim 1, further comprising means for maintaining the gear in engagement with the holes of the preselected guide rail.

4. The work structure of claim 1, wherein the modular guide rails are counterweight guide rails, elevator car guide rails, or combinations thereof.

5. A modular elevator support structure comprising:

a pit channel module;

a header module; and

a plurality of vertical guide rails, each guide rail comprising at least two end-to-end modular sections, wherein:

a lower end of each of a first subset of the plurality of guide rails is attached to the pit channel module, and another end of each of a second subset of the plurality of guide rails is attached to the header module, and

at least one preselected guide rail has holes aligned along its longitudinal axis.

6. The modular elevator support structure of claim 5, further comprising a platform slidably coupled to at least one guide rail and connected to a motor drive having a gear, the gear having teeth which are sized and configured to engage with the holes of the preselected guide rail, wherein operating the motor drive causes the teeth of the gear to engage the holes of the preselected guide rail and to thereby raise or lower the platform along the vertical guide rail.

7. The modular elevator support structure of claim 5, further comprising at least one horizontally-oriented bracket attached to at least two neighboring vertical guide rails.

8. The modular elevator support structure of claim 5, wherein the support structure is configured to support a traction elevator, and the plurality of vertical guide rails comprise at least two counterweight guide rails and at least two elevator car guide rails.

9. The modular elevator support structure of claim 5, wherein the preselected guide rail is a counterweight guide rail.

10. The modular elevator support structure of claim 5, wherein the preselected guide rail is an elevator car guide rail.

11. The modular elevator support structure of claim 5, wherein the holes are formed in the preselected guide rail, or are formed on a longitudinal rail secured to the preselected guide rail.

12. The elevator support structure of claim 6, further comprising means for maintaining the gear in engagement with the holes of the preselected guide rail.

13. A method of erecting an elevator support structure for a traction elevator system, comprising the steps of:

providing a pit channel module on a foundation;
providing a plurality of modular guide rail sections, each guide rail section having two ends;

connecting the first end of each of a preselected number of guide rail sections to the pit channel module to form a first level of guide rail sections, the second end of each of the predetermined number of guide rail sections being connectable in an end-to-end manner with additional guide rail sections,

wherein at least one preselected guide rail section of the first level has a plurality of holes aligned along its longitudinal axis;

slidably coupling a platform to at least one guide rail section, and connecting the platform to a motor drive having a gear, the gear sized and configured to engage with the holes of the preselected guide rail section;

operating the motor drive to engage the holes of the preselected guide rail section and thereby causing the platform to be raised or lowered along the guide rail section; and

installing a header module or additional guide rail sections to form an additional level of guide rail sections.

14. The method of claim 13, wherein the additional level of guide rail sections comprises at least one additional preselected rail section having holes for progressively raising the platform for installation of at least one subsequent level of guide rails or the header module.

15. A method of erecting a rope-driven elevator system comprising the steps of:
providing a pit channel module on a foundation;
providing a plurality of modular guide rail sections, each guide rail section having two ends;

connecting the first end of the plurality of guide rail sections to the pit channel module to form a first level of guide rail sections, the second end of each of the guide rail sections being connectable in an end-to-end manner with additional guide rail sections,

wherein at least one preselected guide rail section of the first level has a plurality of holes aligned along its longitudinal axis;

slidably coupling a platform to at least one guide rail section, and connecting the platform to a first motor drive having a gear, the gear sized and configured to engage with the holes of the preselected guide rail section;

operating the first motor drive to engage the holes of the preselected guide rail section and thereby causing the platform to be raised or lowered along the guide rail section;

installing at least one additional level of guide rail sections and the header module to form an elevator support structure;

securing a second motor drive to the elevator support structure or to the foundation, the second motor drive having a support rope-engagement drive member;

installing an elevator car, an elevator support rope and an elevator counterweight in the elevator support structure in an operably linked manner with the support rope-engagement member such that the car and counterweight are vertically displaceable within the elevator support structure by operation of the second motor drive.

16. The method of claim 15, wherein the first motor drive and the second motor drive are the same or different.

17. The method of claim 15, wherein the elevator system comprises means for maintaining the gear in engagement with the holes of the preselected guide rail section during installation.